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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0091 0010	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/CA2003/001603	International filing date (day/month/year) 20.10.2003	Priority date (day/month/year) 20.10.2003
International Patent Classification (IPC) or both national classification and IPC G01R31/02		
Applicant ORTON, Harry, E.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 19.05.2005	Date of completion of this report 05.10.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Koll, H Telephone No. +31 70 340-4479 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/CA2003/001603

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-5 as originally filed

Claims, Numbers

1-9 as originally filed

Drawings, Sheets

1/2, 2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-9
	No: Claims	
Inventive step (IS)	Yes: Claims	1-9
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1) Reference is made to the following documents:

- D1: PATENT ABSTRACTS OF JAPAN vol. 2003, no. 12, 05.12.2003 & JP 2003 226209 A (YAZAKI CORP), 12.08.2003
D2: PATENT ABSTRACTS OF JAPAN vol. 018, no. 162 (P-1712), 17.03.1994 & JP 05 333121 A (HINO MOTORS LTD), 17.12.1993
D3: PATENT ABSTRACTS OF JAPAN vol. 009, no. 224 (P-387), 10.09.1985 & JP 60 082971 A (TOYOTA JIDOSHA KK), 11.05.1985

2) Article 6 PCT / Conciseness

Although claims 1 and 9 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

3) Clarity

The application does not meet the requirements of Article 6 PCT, because claims 1, 3 and 6-9 are not clear, the reasons being the following:

3.1) Claim 1, 9

3.1.1) The attention of the applicant is directed towards the fact, that the term "...system for..." must be construed as meaning merely "...system suitable for...". A system which is suitable for the application but which was never before described for this purpose, is to be considered as anticipating the claim. As a consequence the terms "the bundle" (see claim 1 and 9, each part (a), "the plurality of loads" and "the plurality of wires" (see claim 1 and 9, each part (c))) are not defined in the claims. This leaves the reader in doubt whether "the bundle" and "the plurality of wires" are part of the system for diagnosing degradation.

Further the expression "located proximate to the bundle" indicates that "the bundle" is part of the system for diagnosing degradation whereas the first four lines of the claims 1 or 9 define that "the bundle" is not part of the system or the tool for diagnosing degradation.

3.1.2) It is not clear from the claims 1 and 9, how or by which features the "indication of a location at which an arc occurred in the plurality of wires" is calculated.

3.1.3) It is not clear from the claims 1 and 9, whether or not the processor is adapted for participating in the diagnosis.

3.1.4) It is not clear from the claims 1 and 9, whether or not the system or tool is adapted to compare the "expected pattern of currents... and patterns of arcs..." with the "signal representative of the current in the bundle".

3.2) Claim 6

3.2.1) It is not clear from claim 6 how the time domain reflectometry is performed (see item (d) of claim 6). Time domain reflectometry as such is known in the field. However such a time domain reflectometry normally uses a stimulating signal (like a pulse signal) which is inputted to a wire to be tested and on which a reflected signal is measured. However for the reader of claim 6 it is not clear if an extra stimulating signal is used or not. If no extra stimulating signal is used the function of the time domain reflectometry is however not clear. This renders the scope of the claim 6 unclear.

4) Novelty

4.1) Claim 1

4.1.1) The document D1 discloses a system comprising:

- (a) a current sensor (see Fig. 1, (9)) located proximate to a bundle (of wires) (see Fig. 1, wires from (1) to (5) and (10)) for producing a signal representative of a current in the bundle (see par. 17, last line);
- (b) a signal processor (see Fig. 1, (4)) coupled to the sensor (9) to receive the signal from the current sensor;
- (c) a pattern database coupled to the signal processor (see claim 1, line 3, "1st reference value decided beforehand", whereby this reference value is a kind of a pattern which must be stored)
- (d) an output device (19) coupled to the signal processor (4).

4.1.2) The subject matter of claim 1 differs from D1 in comprising the following features:
- the system is suitable for diagnosing degradation of a plurality of wires in an electrical

system having plurality of loads connected by the plurality of wires to a direct current power source, the plurality of wires arranged into a bundle near the power source;
- the pattern database (is adapted) to provide the signal processor with expected patterns of currents drawn by the plurality of loads and patterns of arcs which may occur in the plurality of wires;
- the output device (is adapted) to receive an indication of a location at which an arc occurred in the plurality of wires.

4.1.3) Therefore the subject-matter of claim 1 is new in the sense of Article 33(2) PCT.

4.2) Claim 6

Claim 6 represents a method according to the system described in claim 1. Therefore the argumentation concerning claim 1 also applies to claim 6.

4.3) Claim 9

Claim 6 represents a tool according to the system described in claim 1. Therefore the argumentation concerning claim 1 also applies to claim 9.

4.4) Claims 2-5, 7 and 8 are dependent claims and therefore fulfil the requirements of Article 33(2) PCT.

5) Inventive step

5.1) Claim 1, 6, 9

5.1.1) The effect of the additional features is, that the system is suitable for diagnosing degradation of a plurality of wires in an electrical system having plurality of loads connected by the plurality of wires to a direct current power source.

5.1.2) The technical problem to be solved may therefore be regarded as to find a system which is suitable for diagnosing degradation of a plurality of wires in an electrical system having plurality of loads connected by the plurality of wires to a direct current power source.

5.1.3) The system of D1 is not suitable for solving the stated problem, because the software of the processor in D1 is programmed to prevent battery exhaustion during vehicular travelling and parking by estimating the remaining capacity of the battery (see

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D1, abstract). In D1 no hint is given to solve the technical problem of diagnosing degradation of a plurality of wires in an electrical system having plurality of loads connected by the plurality of wires to a direct current power source.

The additional documents of the search report (D2 and D3) also do not give any hint for solving the stated technical problem.

5.1.4) Therefore the subject matter of claims 1, 6 and 9 represent an inventive step and meet the requirements of Article 33(3) PCT.

5.1.5) Claims 2-5, 7 and 8 are dependent claims and therefore fulfil the requirements of Article 33(3) PCT.

6) Industrial applicability

The subject-matter of the above mentioned claims is considered as industrially applicable and these claims therefore fulfil the requirements of Art. 33(4) PCT.